



QA Batch K9805793 (Semivolatiles)

Site Duwamish River

Page 3

Results and quantitation limits for samples listed above were qualified as estimated (UJ/J)

2. GC/MS Instrument Performance Check

All tuning check compound mass abundances and ratios were within contract required limits.

3. Initial Calibration

All target analytes and system monitoring compounds were within required limits for the initial calibration with ~~RRF~~ percent relative standard deviations (percent RSD) less than 30 percent with the following exceptions

Date	Compound	% RSD	Associated Samples
10/1/98	Hexachlorocyclopentadiene	56.8	98354020 through 98354039

Results and quantitation limits for compounds associated with the above calibrations and samples have been qualified as estimated (J) as a high RSD is indicative of calibration nonlinearity.

For selected ion monitoring (SIM) analysis of PCP, linear regression was used for quantitation when percent RSDs exceeded 30 percent.

4. Continuing Calibrations

All target analytes were within required limits for the continuing calibration with ~~RRF~~ percent differences less than 25 percent with the following exceptions

Date	Compound	% Diff	Associated Samples
10/5/98	Hexachlorocyclopentadiene	51.6	98354020 through 98354025 98354036
10/6/98	Hexachlorocyclopentadiene	57	98354026 through 98354035

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QA Batch K9805793 (Semivolatiles)

Site: Duwamish River

Page 4

Date	Compound	% Diff	Associated Samples
10/7/98	Hexachlorocyclopentadiene	49.8	98354037 through 98354039

Positive results for compounds associated with the above calibrations and samples have been qualified as estimated (J)

5. Detection Limits

Instrument detection limits met project required quantitation limits.

6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met.

The following compounds were detected in laboratory method blanks:

Blank ID	Compound (Scan No.)	Concentration
KWG9803422-5MB	Unknown (8.27 minutes)	0.2 mg/Kg
KWG9803422-5MB	Unknown (21.31 minutes)	0.6 mg/Kg
KWG9803422-5MB	Unknown (22.66 minutes)	1.0 mg/Kg
KWG9803422-5MB	Unknown (22.79 minutes)	0.3 mg/Kg

As no target analytes were detected in the Method Blank, no qualifiers were assigned based on Method Blank results.

b) Field Blanks

No field blanks were associated with this laboratory batch

7 System Monitoring Compounds (Surrogates)

Surrogate compound percent recoveries met quality control criteria (P-project, L-laboratory) for all samples with the following exceptions:

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QA Batch K9805793 (Semivolatiles)

Site: Duwamish River

Page 5

Sample	Fraction	Compound	% Recovery	QC Limits
98354020	Acid	2,4,6-Tribromophenol	4	19-122 (P) 18-140 (L)
98354021	Acid	2,4,6-Tribromophenol	2	19-122 (P) 18-140 (L)
98354022	Acid	2,4,6-Tribromophenol	1	19-122 (P) 18-140 (L)
98354023	Acid	2,4,6-Tribromophenol	2	19-122 (P) 18-140 (L)
98354024	Acid	2,4,6-Tribromophenol	2	19-122 (P) 18-140 (L)
98354025	Acid	2,4,6-Tribromophenol	7	19-122 (P) 18-140 (L)
98354026	Acid	2,4,6-Tribromophenol	1	19-122 (P) 18-140 (L)
98354027	Acid	2,4,6-Tribromophenol	4	19-122 (P) 18-140 (L)
98354030	Acid	2,4,6-Tribromophenol	2	19-122 (P) 18-140 (L)
98354031	Acid	2,4,6-Tribromophenol	1	19-122 (P) 18-140 (L)
98354032	Acid	2,4,6-Tribromophenol	1	19-122 (P) 18-140 (L)
98354034	Acid	2,4,6-Tribromophenol	1	19-122 (P) 18-140 (L)
98354035	Acid	2,4,6-Tribromophenol	1	19-122 (P) 18-140 (L)
98354039	Acid	2,4,6-Tribromophenol	17	19-122 (P) 18-140 (L)
98354036MS	Acid	2,4,6-Tribromophenol	<1	19-122 (P) 18-140 (L)
98354036DMS	Acid	2,4,6-Tribromophenol	<1	19-122 (P) 18-140 (L)

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QA Batch K9805793 (Semivolatiles)

Site: Duwamish River

Page 6

As the above samples had one surrogate recovery less than 10 percent, positive results in the acid fraction were qualified as estimated (J) and quantitation limits for undetected compounds in the acid fraction were rejected (R). The case narrative indicates that the samples appear to have been derivitized. Samples were reextracted and acceptable surrogate results were obtained though samples had exceeded holding times. Reported sample results were combined by the reviewer to report base/neutral compound results from the initial analysis and acid fraction compounds from the re-analysis.

8. Laboratory Control Sample (LCS)

LCS percent recoveries met quality control criteria for all compounds with the following exceptions:

Sample	Compound	% Recovery	QC Limits	Associated Samples
KWG9802839-3	Pentachlorophenol	NA	38-107	98354020 through 98354039
KWG9803422-4	1,4-Dichlorobenzene	1	29-100	98354020RE through 98354039RE
KWG9803422-4	Pentachlorophenol	4	38-107	98354020RE through 98354039RE

Results and quantitation limits for samples associated with the above Laboratory Control Samples were qualified as estimated (J/UJ).

9. Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) percent recoveries met QC guidelines (P-project, L-laboratory) with the following exceptions:



QA Batch K9805793 (Semivolatiles)

Site: Duwamish River

Page 7

Sample	Compound	% Recovery	QC Limits
98354036MS	2,4-Dinotrotoluene	92	28-89 (P) 40-109 (L)
98354036DMS	2,4-Dinotrotoluene	92	28-89 (P) 40-109 (L)
98354038DMS	2,4-Dinotrotoluene	92	28-89 (P) 40-109 (L)

Pentachlorophenol was not recovered in the 98364036 MS and 98364036DMS. Samples appear to have been derivitized by an unknown agent.

Relative percent differences (RPD) between the MS and MSD percent recoveries met QC guidelines for all compounds with the following exception

Sample	Compound	RPD	QC Limits
98354038	Pentachlorophenol	67	47

The RPD value was not determined for Pentachlorophenol in samples 98354036MS and 98354036DMS as no analyte was recovered in the spiked samples. No action was based solely on MS/MSD data.

10. Field Duplicate Analysis

No field duplicates were associated with this SDG.

11. Internal Standards Performance

Internal standard areas were within requirements of -50 percent to +100 percent of associated calibration internal standard areas for all samples

12. Sample Analysis

A cursory raw data review was performed. All laboratory deliverables were present and complete. A duplicate analysis was performed on sample 98354036, no analytes were detected in the sample or duplicate. The case narrative indicates that the initial extracts for all samples appear to have been derivitized, possibly from contaminated acetone. All samples were reextracted outside the holding time. The recovery for Pentachlorophenol

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QA Batch K9805793 (Semivolatiles)

Site: Duwamish River

Page 8

in the reextracted batch was low in the LCS, but acceptable in the MS and DMS. As Pentachlorophenol was not detected in the samples, no further action was taken. Reported sample results were combined by the reviewer to report base/neutral compound results from the initial analysis and acid fraction compounds from the re-analysis. Since reanalysis was outside of holding times, acid fraction results and detection limits were qualified as estimated (J/UJ) No other unusual problems were noted.

13. Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values

Data Qualifiers

U - The compound was analyzed for, but was not detected.

UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard

R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

N - Presumptive evidence of presence of material (tentative identification).

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354020						Units	mg/Kg (ppm)
Lab Code	K9805793-001						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R UJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R UJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R UJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R UJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R UJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R UJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	R UJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	R UJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R UJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R UJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R UJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.03	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R UJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R UJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

Acid fraction compound results
 taken from re-extraction and
 reanalysis

R UJ

1/12/99

RW

Date 10/20/98

00082
Page No.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354020	Units	mg/Kg (ppm)
Lab Code	K9805793-001	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	R CJ
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	0.3 J
Phenanthrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.19	
Anthracene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.38	
Pyrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.30	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.02	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.10	
Chrysene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.17	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.34	
Di-n-octyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.15	
Benzo(k)fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.14	
Benzo(a)pyrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.12	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.09	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.08	
Carbazole	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.02	

Approved By _____
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Date 10/20/98

00083

Page No

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354020
Lab Code K9805793-001
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time	Estimated Concentration	Result Notes
		(minutes)		
-	Unknown	8 66	0 4	
-	Unknown	21 14	0 3	
-	Unknown	23 87	1 0	
-	Unknown	24 21	0 9	
-	Unknown alcohol	24 91	0 5	
-	Unknown aldehyde	25 11	0 3	
-	Unknown alcohol	26 68	1 7	
-	Unknown aldehyde	27 01	3 5	
-	Unknown alcohol	29 14	2 4	
-	Unknown aldehyde	29 43	2 2	
-	Unknown	29 93	1 2	
-	Unknown	30 83	1 0	
-	Unknown aldehyde	31 15	0 7	
-	Unknown	32 34	2 2	
-	Unknown	32 50	1 3	
-	Unknown	32 57	1 5	
-	Unknown	32 66	1 3	
-	Unknown	33 12	3 0	
-	Unknown	33 79	0 8	
1058-61-3	Stigmast-4-en-3-one	34 05	1 4	

Approved By _____

Lew

Date 10/20/98

00084
Page No

KWT/10/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354021	Units	mg/Kg (ppm)					
Lab Code	K9805793-002	Basis	Dry					
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R uJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	R uJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	R uJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	uJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R uJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R uJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.06	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R uJ
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

Acid fraction results from
re-extraction and re-analysis

R uJ
1/12/99

M. J. Weller

Approved By

LW

Date

10/20/98

00085

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354021	Units	mg/Kg (ppm)					
Lab Code	K9805793-002	Basis	Dry					
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	R 45
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	R 0.1 J
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 10	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 31	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 29	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 02	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 10	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 15	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 32	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 15	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 14	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 12	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 08	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 07	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	

Approved By _____
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05793SVM AY1 2 10/20/98

Date 10/20/98 00086

Page No

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F. Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354021
Lab Code K9805793-002
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	8 66	0 3	
-	Unknown	21 34	0 5	
-	Unknown	23 87	0 6	
-	Unknown	24 21	0 6	
-	Unknown	24 91	0 4	
-	Unknown alcohol	26 68	1 2	
-	Unknown aldehyde	27 01	1 9	
-	Unknown	29 14	1 8	
-	Unknown aldehyde	29 43	1 4	
-	Unknown	29 93	0 8	
-	Unknown	30 83	0 9	
-	Unknown	32 34	1 4	
-	Unknown	32 51	1 1	
-	Unknown	32 57	1 1	
-	Unknown PAH	32 66	1 0	
-	Unknown	33 13	2 1	
-	Unknown	34 05	0 7	

Approved By

RW

Date

10/20/98

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Page No

KST/10/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354022						Units	mg/Kg (ppm)
Lab Code	K9805793-003						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R uJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R uJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	R uJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	R uJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R uJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R uJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R uJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.06	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R uJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R uJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

Acid fraction results from
re-extraction and reanalysis

R uJ
1/12/99

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Approved By _____

LW

Date 10/20/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354022	Units	mg/Kg (ppm)
Lab Code	K9805793-003	Basis	Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	R@4J
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	R@4J
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 14	R@4J
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 03	R@4J
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 46	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 39	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 05	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 13	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 21	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 52	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 03	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 19	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 19	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 15	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 09	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 08	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 03	

Approved By _____
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05793SVM AY1 3 10/20/98

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Date 10/20/98

00089

Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354022
Lab Code K9805793-003
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	24 21	0 9	
-	Unknown	24 91	0 7	
-	Unknown alcohol	26 69	2 1	
-	Unknown aldehyde	27 02	4 4	
-	Unknown PAH	27 99	0 7	
-	Unknown	29 15	2 7	
-	Unknown aldehyde	29 43	3 0	
-	Unknown	29 93	1 6	
-	Unknown	30 63	0 8	
-	Unknown alcohol	30 83	1 4	
-	Unknown aldehyde	31 15	0 8	
-	Unknown	31 57	0 7	
-	Unknown	32 36	2 2	
-	Unknown	32 51	1 7	
559-70-6	beta -Amyrin	32 58	2 0	
-	Unknown PAH	32 67	1 6	
-	Unknown	33 14	3 4	
-	Unknown	33 43	0 8	
-	Unknown	33 81	0 8	
-	Unknown	34 06	1 1	

Approved By _____

LW

Date 10/20/98

TIC/05793 SVM AY1 3T 10/15/98

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Page No.*10/11/98*



QA Batch K9805793 (Semivolatiles)

Site: Duwamish River

Page 2

follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240.1-05, February 1994)

1 Timeliness

All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis for the initial analysis. The following samples were reextracted outside the extraction holding time:

Sample Number	Sampling Date	Extraction Date	Analysis Date	Holding Time
98354020RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354021RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354022RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354023RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354024RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354025RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354026RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354027RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354028RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354029RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354030RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354031RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354032RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354033RE	8/25/98	10/7/98	10/22/98	40 days (extraction)
98354034RE	8/26/98	10/7/98	10/22/98	39 days (extraction)
98354035RE	8/26/98	10/7/98	10/22/98	39 days (extraction)
98354036RE	8/26/98	10/7/98	10/22/98	39 days (extraction)
98354037RE	8/26/98	10/7/98	10/22/98	39 days (extraction)
98354038RE	8/26/98	10/7/98	10/22/98	39 days (extraction)
98354039RE	8/26/98	10/7/98	10/22/98	39 days (extraction)

This document was prepared by Roy F. Weston, Inc. expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354023	Units Basis	mg/Kg (ppm) Dry					
Lab Code	K9805793-004							
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 45
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 45
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 45
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 45
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 45
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R 45
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	R 45
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R 45
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R 45
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.04	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98		
Acenaphthene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Dibenzofuran	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R 45
4-Nitrophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R 45
Fluorene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

Acid fraction results from
re-extraction and re-analysis

R 45

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Page No.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354023						Units	mg/Kg (ppm)
Lab Code	K9805793-004						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	KWJ
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	KWJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 13	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 36	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 32	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 04	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 12	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 18	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 61	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 04	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 18	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 17	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 13	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 08	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 08	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 02	

Approved By _____
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Date 10/20/98

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Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354023
Lab Code K9805793-004
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	23 88	0 8	
-	Unknown	23 90	0 5	
-	Unknown	23 94	0 5	
-	Unknown	24 22	0 9	
-	Unknown	24 92	0 8	
-	Unknown aldehyde	25 13	0 5	
-	Unknown	26 70	0 7	
-	Unknown aldehyde	27 04	1 4	
-	Unknown	29 15	1 0	
-	Unknown aldehyde	29 44	0 9	
-	Unknown	29 94	0 5	
-	Unknown	30 84	0 6	
-	Unknown	32 37	0 7	
-	Unknown	32 53	0 6	
-	Unknown	32 60	0 7	
-	Unknown PAH	32 68	0 6	
-	Unknown	33 15	1 2	
-	Unknown	33 45	0 3	
-	Unknown	33 82	0 3	
-	Unknown	34 07	0 4	

Approved By _____
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Date 10/20/98

00093

Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:
Project:
Sample Matrix:

Roy F Weston, Inc
Duwamish River/4000-027-001-2019-38
Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354024						Units	mg/Kg (ppm)
Lab Code	K9805793-005						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X uJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X uJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X uJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X uJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	X uJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X uJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	X uJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	X uJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	uJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	X uJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	X uJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	X uJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	X uJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

Acid fraction results from
re-extraction and reanalysis

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Date 10/20/98

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Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354024			Units	mg/Kg (ppm)		
Lab Code	K9805793-005			Basis	Dry		
Test Notes							
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND <i>KUJ</i>
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND <i>KUJ</i>
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 09
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 22
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 19
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 02
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 06
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 11
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 13
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 10
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 11
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 08
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 06
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 05
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND

*MAP/10/98*Approved By _____
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Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354024
Lab Code K9805793-005
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention	Estimated Concentration	Result Notes
		Time (minutes)		
-	Unknown	8 63	0 3	
-	Unknown	20 03	0 6	
-	Unknown	20 20	0 4	
-	Unknown	21 31	0 3	
-	Unknown	21 62	0 4	
-	Unknown	21 64	0 3	
-	Unknown	21 83	0 7	
-	Unknown	21 88	0 3	
-	Unknown	21 93	0 3	
-	Unknown aldehyde	27 00	1 8	
-	Unknown alcohol	29 13	1 0	
-	Unknown aldehyde	29 42	1 3	
57-88-5	Cholesterol	30 38	0 9	
-	Unknown	31 57	0 8	
-	Unknown	32 34	1 1	
-	Unknown	33 12	1 5	

Approved By _____

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Date

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00096

Page No

WT/10/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354025						Units	mg/Kg (ppm)
Lab Code	K9805793-006						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X 45
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X 45
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X 45
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X 45
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	X 45
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	X 45
Bis(2-chlorooxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	X 45
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	X 45
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	X 45
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	X 45
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	X 45
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	X 45
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	X 45
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

Acid fraction results from
re-extraction and re-analysis

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354025			Units	mg/Kg (ppm)			
Lab Code	K9805793-006			Basis	Dry			
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	R CJ
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	R CJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 07	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 16	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 14	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 05	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 09	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 10	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 07	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 08	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 06	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 04	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	0 04	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	

*MAP 11/16/98*Approved By _____
1S2P\982995VM AY2 - 6 10/15/98*RW*Date 10/20/9800098
Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354025
Lab Code K9805793-006
Test Notes.

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	20 03	0 4	
-	Unknown	21 62	0 3	
-	Unknown	21 83	0 4	
-	Unknown aldehyde	27 00	1 1	
-	Unknown alcohol	29 13	0 7	
-	Unknown aldehyde	29 42	0 8	
-	Unknown	32 35	0 8	
-	Unknown	33 11	1 0	

Approved By _____

HW

Date

10/20/98

00099

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354026						Units	mg/Kg (ppm)
Lab Code	K9805793-007						Basis	Dry
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0.14 J	
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R 45	
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R 45	
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R 45	
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND R 45	
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R 45	
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND R 45	
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND R 45	
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND uJ	
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND R 45	
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND R 45	
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0.03	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND R 45	
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND R 45	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
 re-extraction and re-analysis

RW
 1/12/199

RW

Date 10/20/98

00100
 Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354026						Units	mg/Kg (ppm)
Lab Code	K9805793-007						Basis	Dry
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	RW
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	RW
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 21	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0 30	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 26	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 09	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 16	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 39	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 09	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 08	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	

10/20/98

Approved By _____
IS2P052985 SVM AY2 - 7 10/15/98

RW

Date 10/20/98

00101
Page No.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354026
Lab Code K9805793-007
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown aldehyde	21 60	0 4	
-	Unknown aldehyde	26 92	0 9	
-	Unknown	29 07	0 9	
-	Unknown aldehyde	29 36	1 0	
-	Unknown	32 25	1 0	
-	Unknown	33 02	1 2	
1058-61-3	Stigmast-4-en-3-one	33 95	0 7	

Approved By _____

RW

Date

10/20/98

TIC/027-001-2019-38 SVM AY2 - TT 10/15/98

00102
Page No*WAT/10/98*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354027	Units	mg/Kg (ppm)					
Lab Code	K9805793-008	Basis	Dry					
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R UJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	R UJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	R UJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R UJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0.03	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
 re-extraction of reanalysis

RJM
 1/12/99

KAT 1/10/99

Approved By
 05793 SVM AT2 - 8/10/15/98

JW

Date 10/20/98

00103

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354027			Units	mg/Kg (ppm)			
Lab Code	K9805793-008			Basis	Dry			
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	R-45
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	R-45
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 31	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 25	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 17	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 28	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 16	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 14	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 09	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	

Approved By _____
 LS2P/MS298SVM AY2 8/10/15/98

XW

Date 10/20/98

00104
Page No.*NGT/JWKA*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354027
Lab Code K9805793-008
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention	Estimated Concentration	Result Notes
		Time (minutes)		
-	Unknown	23 83	0 5	
-	Unknown	24 17	0 5	
-	Unknown	26 61	1 1	
-	Unknown aldehyde	26 94	3 1	
-	Unknown	27 67	0 5	
-	Unknown PAH	27 89	0 5	
-	Unknown	29 08	1 8	
-	Unknown aldehyde	29 38	2 5	
-	Unknown	29 88	1 3	
57-88-5	Cholesterol	30 33	0 5	
-	Unknown aldehyde	31 09	0 9	
-	Unknown	32 27	1 0	
-	Unknown	32 43	1 2	
-	Unknown	32 50	1 4	
-	Unknown	32 59	1 3	
-	Unknown	33 05	2 8	
-	Unknown	33 35	0 7	
-	Unknown	33 46	0 5	
-	Unknown	33 70	0 7	
-	Unknown	33 96	1 0	

Approved By _____

TIC/051693SVM AY2 8T 10/15/98

RW

Date

10/20/98

00105
Page No

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354028						Units	mg/Kg (ppm)
Lab Code	K9805793-009						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R UJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Bis(2-chlorooxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	R UJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	R UJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	UJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R UJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from re-extraction
 + re-analysis *

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354028	Units	mg/Kg (ppm)					
Lab Code	K9805793-009	Basis	Dry					
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	R uJ
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	R uJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 30	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 23	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 03	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 17	
Butyl(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 41	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 15	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 08	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 09	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	

Approved By _____
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*RW*Date 10/20/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354028
Lab Code K9805793-009
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	24 17	0 7	
-	Unknown alcohol	26 63	1 1	
-	Unknown aldehyde	26 96	3 1	
-	Unknown	29 09	1 7	
-	Unknown aldehyde	29 39	3 4	
-	Unknown	29 90	1 7	
-	Unknown ketone	30 02	0 5	
57-88-5	Cholesterol	30 35	1 3	
-	Unknown	30 78	0 6	
-	Unknown aldehyde	31 11	1 0	
-	Unknown	32 31	2 8	
-	Unknown	32 45	2 2	
-	Unknown	32 53	2 6	
-	Unknown	32 62	2 0	
-	Unknown	32 81	1 2	
-	Unknown	33 08	4 4	
-	Unknown	33 37	1 3	
-	Unknown	33 47	0 7	
-	Unknown	33 72	1 0	
1058-61-3	Stigmast-4-en-3-one	33 98	1 5	

Approved By _____

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Date 10/20/98

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Page No

WATSON

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354029	Units	mg/Kg (ppm)					
Lab Code	K9805793-010	Basis	Dry					
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R uJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	R uJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	R uJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	uJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R uJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R uJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0.04	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R uJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R uJ
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fractions results from
 re-extraction & reanalysis

RW
 1/12/99

WT 1/10/99



Roy F Weston, Inc
Suite 5700
700 5th Avenue
Seattle, Washington 98104-5057
206-521-7600 • Fax 206-521-7601

MEMORANDUM

DATE 14 January 1999

TO: David Bennett, WAM, U S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
✓RMM Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Semivolatile Organics (BNA) Data
Laboratory Batch: K9805793
Site Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO . 4000-019-038-5200-00

DOC. CONTROL NO.: 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle (memo only)
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of twenty sediment samples, laboratory batch K9805793, collected from the Duwamish River has been completed. Samples were analyzed for semivolatile organics (BNAs) by Columbia Analytical Services of Kelso, Washington using EPA Method 8270. The samples were numbered:

98354020	98354021	98354022	98354023	98354024
98354025	98354026	98354027	98354028	98354029
98354030	98354031	98354032	98354033	98354034
98354035	98354036	98354037	98354038	98354039

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review

This document was prepared by Roy F Weston, Inc expressly for the EPA. It shall not be disclosed in whole or in part without the express, written permission of the EPA.

98-0622E 021
DCN 4000-019-038-AAAK

14 January 1999
Region X



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354029						Units	mg/Kg (ppm)
Lab Code	K9805793-010						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	R 45
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	R 45
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 14	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 34	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 29	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 06	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 18	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 26	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 15	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 17	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 14	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 03	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	

Approved By _____
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Date

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: 98354029
Lab Code: K9805793-010
Test Notes:

Prep Method: EPA 3550A
Analysis Method: 8270C
Units: mg/Kg (ppm)
Basis: Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	21 61	0 3	
-	Unknown	26 61	0 7	
-	Unknown aldehyde	26 93	1 2	
192-97-2	Benzo(e)pyrene	27 90	0 3	
-	Unknown alcohol	29 08	1 1	
-	Unknown aldehyde	29 37	1 1	
-	Unknown	29 89	0 6	
-	Unknown ketone	30 01	0 3	
-	Unknown alcohol	30 77	0 4	
-	Unknown	31 09	0 3	
-	Unknown	32 27	1 1	
-	Unknown	32 42	0 8	
-	Unknown	32 49	0 9	
-	Unknown	32 58	0 9	
-	Unknown	33 04	1 7	
-	Unknown	33 34	0 3	
-	Unknown	33 45	0 3	
-	Unknown	33 70	0 4	
1058-61-3	Stigmast-4-en-3-one	33 97	0 6	

Approved By

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RW

Date 10/20/98

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Page No

KPT1699

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354030						Units	mg/Kg (ppm)
Lab Code	K9805793-011						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R 45
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	R 45
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	R 45
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R 45
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R 45
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R 45
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R 45
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R 45
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
 re-extraction of reanalysis

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Approved By
 05793 SVM AY3 - 11-10-13-98

Date 10/20/98 00112

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354030	Units	mg/Kg (ppm)					
Lab Code	K9805793-011	Basis	Dry					
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	R uJ
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	R uJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 05	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 05	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 08	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 16	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 07	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 07	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 06	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 05	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 05	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	

Approved By _____
 IS2p/MS/SVM.AY3 - 11 10/15/98

Date 10/20/98

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Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354030
Lab Code K9805793-011
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	21 61	0 3	
-	Unknown	24 86	0 3	
-	Unknown	26 60	0 5	
-	Unknown aldehyde	26 93	1 0	
-	Unknown	29 07	0 8	
-	Unknown aldehyde	29 37	0 9	
-	Unknown	29 87	0 4	
-	Unknown aldehyde	31 08	0 3	
-	Unknown	32 26	0 8	
-	Unknown	32 42	0 5	
-	Unknown PAH	32 48	0 5	
-	Unknown	32 56	0 5	
-	Unknown	33 03	1 1	
-	Unknown	33 95	0 5	

Approved By

TIC/052993SVM.AY3 -11T 10/15/98

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Date 10/20/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354031						Units	mg/Kg (ppm)
Lab Code	K9805793-012						Basis	Dry
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R uJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R uJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	R uJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	R uJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	uJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R uJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R uJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0.03	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R uJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R uJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
re-extraction & reanalysis

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Approved By
057935.VM.AY3 1210/13/98

Date 10/20/98

Page No. 00115

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354031			Units	mg/Kg (ppm)			
Lab Code	K9805793-012			Basis	Dry			
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	X 45
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	X 45
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 30	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 25	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 04	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 18	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 20	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 15	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 15	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 09	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 09	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354031	Prep Method	EPA 3550A
Lab Code	K9805793-012	Analysis Method	8270C
Test Notes		Units	mg/Kg (ppm)
CAS Number	TIC	Retention Time (minutes)	Estimated Concentration
-	Unknown	7 68	0 5
-	Unknown	20 16	0 5
-	Unknown	21 61	0 6
-	Unknown	21 80	0 5
-	Unknown	26 62	0 9
-	Unknown aldehyde	26 94	2 0
-	Unknown alcohol	29.09	1.9
-	Unknown aldehyde	29 37	1 3
-	Unknown	31 09	0 6
-	Unknown	32 30	0 8
-	Unknown	33 04	1 1

Approved By _____

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Page No

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354032	Units	mg/Kg (ppm)					
Lab Code	K9805793-013	Basis	Dry					
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R 45
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R 45
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	R 45
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	R 45
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	WT
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R 45
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R 45
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R 45
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R 45
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
 re-extraction + reanalysis
 R 45
 1/12/98

Approved By
 05793SVM.AY3 - 13-10-1398

LW

Date 10/20/98

00118
 Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354032	Units	mg/Kg (ppm)					
Lab Code	K9805793-013	Basis	Dry					
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	✓ uJ
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	✓ uJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 29	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 24	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 03	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 16	
Butyl(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 36	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 15	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 09	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 08	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	

Approved By _____
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Date 10/20/98

00119
Page No*10/1/98*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354032
Lab Code K9805793-013
Test Notes

Prep Method. EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	23 84	0 5	
-	Unknown PAH	24 17	0 6	
-	Unknown alcohol	24 87	0 5	
822-23-1	Acetic acid, octadecyl ester	26 64	1 5	
-	Unknown aldehyde	26 97	5 2	
-	Unknown	27 92	0 6	
-	Unknown	29 10	3 0	
-	Unknown aldehyde	29 39	3 4	
-	Unknown	29 90	1 4	
57-88-5	Cholesterol	30 35	0 9	
-	Unknown	30 79	1 0	
-	Unknown aldehyde	31 11	1 2	
-	Unknown	31 52	0 7	
-	Unknown	32 29	1 0	
-	Unknown	32 46	1 6	
-	Unknown	32 52	2 0	
-	Unknown	32 61	1 6	
-	Unknown	33 08	3 7	
-	Unknown	33 37	0 9	
-	Unknown	33 73	0 9	
1058-61-3	Stigmast-4-en-3-one	33 99	1 1	

Approved By

TIC/052593SVM.A.Y3 13T 10/15/98

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Date 10/20/98

00120
Page No

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354033	Units	mg/Kg (ppm)					
Lab Code:	K9805793-014	Basis	Dry					
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	R UJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	R UJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	R UJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	R UJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	UJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	R UJ
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
 re-extraction & reanalysis

Rew
 1/12/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/25/98
 Date Received: 8/26/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354033						Units	mg/Kg (ppm)
Lab Code	K9805793-014						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	X 45
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	X 45
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 34	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 27	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 03	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 18	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 40	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 17	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 16	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Di- <i>benz(a,h)anthracene</i>	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 10	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	

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Approved By _____

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Date 10/10/98

00122
Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/25/98
Date Received: 8/26/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354033
Lab Code K9805793-014
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time	Estimated Concentration	Result Notes
		(minutes)		
-	Unknown	26 63	1 3	
-	Unknown aldehyde	26 97	4 4	
-	Unknown	27 92	0 6	
-	Unknown	29 10	2 3	
-	Unknown aldehyde	29 40	2 9	
-	Unknown	29 90	1 7	
-	Unknown ketone	30 03	0 5	
57-88-5	Cholesterol	30 36	1 2	
-	Unknown	30 79	1 3	
-	Unknown aldehyde	31 11	0 9	
-	Unknown	31 53	0 7	
-	Unknown	32 30	1 0	
-	Unknown	32 46	1 7	
-	Unknown	32 54	2 0	
-	Unknown	32 62	2 0	
-	Unknown	33 09	4 0	
-	Unknown	33 37	1 1	
-	Unknown	33 49	0 6	
-	Unknown	33 75	0 8	
1058-61-3	Stigmast-4-en-3-one	34 01	1 1	

Approved By

RW

Date

10/20/98

00123
Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/26/98
 Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354034						Units	mg/Kg (ppm)
Lab Code	K9805793-015						Basis	Dry
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	X 45
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	X 45
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	X 45
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	X 45
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	X 45
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	X 45
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	X 45
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	X 45
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	X 45
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	X 45
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	X 45
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	X 45
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	X 45
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
 re-extraction & reanalysis

X run
 1/12/99

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/26/98
 Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354034	Units	mg/Kg (ppm)					
Lab Code	K9805793-015	Basis	Dry					
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	R u J
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	R u J
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 28	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 21	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 08	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 08	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0 08	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 07	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	

RWT/10/20/98

RW

Approved By _____
ISZP#052995 SVM AY3 - 15 10/15/98

Date 10/20/98

00125

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354034
Lab Code K9805793-015
Test Notes

Prep Method	EPA 3550A
Analysis Method	8270C
Units	mg/Kg (ppm)
Basis	Dry

CAS Number

TIC

Retention Time (minutes)

Estimated Concentration

Result Notes

1058-61-3

-	Unknown	26 61	0 5
-	Unknown aldehyde	26 94	1 0
-	Unknown	29 08	0 7
-	Unknown aldehyde	29 38	0 9
-	Unknown	29 88	0 5
-	Unknown	31 51	0 5
-	Unknown	32 27	1 0
-	Unknown	32 43	0 6
-	Unknown	32 49	0 6
-	Unknown	32 58	0 6
-	Unknown	33 04	1 2
-	Stigmast-4-en-3-one	33 97	0 6

Approved By

XW

Date

10/20/98

TIC/052093SVM.AY3 - LST 10/15/98

00126

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/26/98
 Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354035						Units	mg/Kg (ppm)
Lab Code	K9805793-016						Basis	Dry
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	0.06 J	
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R uJ	
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/6/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R uJ	
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R uJ	
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND R 4J	
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND R uJ	
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND R uJ	
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/6/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/6/98	ND R uJ	
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND uJ	
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND R uJ	
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND R uJ	
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND R uJ	
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/6/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/6/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/6/98	ND	

Acid fraction results from
re-extraction & reanalysis

R W
1/12/99

Approved By
05793SVM AT4 10-10-13/98

Date 10/20/98

0.0127

WAT 10/19

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354035						Units	mg/Kg (ppm)
Lab Code	K9805793-016						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	X 45
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/6/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/6/98	ND	X 45
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 18	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 02	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 39	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 30	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/6/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 13	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 19	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 17	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 18	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 16	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 12	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 03	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 11	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/6/98	0 04	

Approved By _____
 IS2p/BS200SVM AY4 - 16 10/15/98

XW

Date

(10/20/98)

00128

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98
Date Extracted: 9/1/98
Date Analyzed: 10/6/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354035
Lab Code K9805793-016
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	20 16	0 4	
-	Unknown	21 29	0 2	
-	Unknown	21 61	0 6	
-	Unknown	21 80	0 3	
-	Unknown alcohol	26 62	0 5	
-	Unknown aldehyde	26 95	1 7	
-	Unknown	29 09	1 0	
-	Unknown aldehyde	29 38	1 2	
-	Unknown	30 57	0 5	
-	Unknown	30 78	0 5	
-	Unknown aldehyde	31 09	0 6	
-	Unknown	31 51	0 5	
-	Unknown	32 28	0 9	
-	Unknown	32 45	0 8	
-	Unknown PAH	32 50	0 7	
-	Unknown	32 59	0 7	
-	Unknown	33 06	1 8	
-	Unknown	33 97	0 5	

Approved By _____

TIC052693SVM.AY4 - 16T 10/15/98

RW

Date

10/20/98

00129
Page No*MAP/10/98*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354036						Units	mg/Kg (ppm)
Lab Code	K9805793-017						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	0.06	J
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 4J
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 4J
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 4J
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R 4J
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	R 4J
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	R 4J
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	R 4J
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	W
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R 4J
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R 4J
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	R 4J
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	R 4J
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

Acid fraction results from
 re-extraction & reanalysis
 1/12/99

8/11/99

Approved By
 03793SVM.AY4 - 171015/98

RW

Date

10/20/98

00130
 Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354036						Units	mg/Kg (ppm)
Lab Code	K9805793-017						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	R 45
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/5/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/5/98	ND	R UJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/5/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/5/98	ND	

Approved By _____
IS2P/632938.VM.AY4 17 10/15/98

(R.W.)

Date 10/20/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354036
Lab Code K9805793-017
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number

TIC

Retention
Time
(minutes)

Estimated
Concentration

Result
Notes

No tentatively identified compounds detected

Approved By

RW

Date

10/20/98

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TIC/052093SVM AY4 17T 10/15/98

Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/26/98
 Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354037						Units	mg/Kg (ppm)
Lab Code	K9805793-018						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/7/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	R UJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/7/98	ND	R UJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/7/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	R UJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	UJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	0.02	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	R UJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	0.02	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	

Acid fraction results from
 re-extraction & re-analysis

1/12/99

Approved By
 05793SVMAY4 - 18101598

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Date

10/20/98

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Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354037			Units	mg/Kg (ppm)			
Lab Code	K9805793-018			Basis	Dry			
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/7/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/7/98	ND	X UJ
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/7/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/7/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/7/98	ND	X UJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 29	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 06	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 62	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 53	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	0 02	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/7/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 18	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 31	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 28	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 21	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 22	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 20	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 16	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 03	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 15	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 04	

Approved By _____
 IS2P/052995 SVM.AY4 - 18 10/15/98

*RW*Date 10/30/9800134
Page No*NET/10/98*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98
Date Extracted: 9/1/98
Date Analyzed: 10/7/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354037
Lab Code K9805793-018
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	20 49	0 6	
-	Unknown	26 56	0 6	
-	Unknown aldehyde	26 88	1 8	
822-23-1	Acetic acid, octadecyl ester	29 03	1 0	
-	Unknown aldehyde	29 33	1 4	
-	Unknown	29 85	0 6	
-	Unknown	29 97	0 4	
57-88-5	Cholesterol	30 28	0 8	
-	Unknown	30 73	0 7	
-	Unknown	32 23	1 8	
-	Unknown	32 37	1 3	
-	Unknown	32 43	0 9	
-	Unknown	32 51	1 0	
-	Unknown	32 98	2 3	
-	Unknown	33 27	0 7	
-	Unknown	33 38	0 4	
-	Unknown	33 64	0 4	
1058-61-3	Stigmast-4-en-3-one	33 89	1 0	
-	Unknown	34 31	0 5	

Approved By

KW

Date 10/20/98

TIC/0521993 SVM AY4 18T 10/15/98

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Page No*MAP/10/98*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354038						Units	mg/Kg (ppm)
Lab Code	K9805793-019						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/7/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	R UJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/7/98	ND	R UJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/7/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	R UJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	UJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	R UJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	

Acid fraction results from
re-extraction & re-analysis

Rum
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Approved By
03793SVM AY4 - 19 10/13/98

Date 10/30/98

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Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/26/98
 Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354038	Units	mg/Kg (ppm)					
Lab Code	K9805793-019	Basis	Dry					
Test Notes								
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/7/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0 2	1	9/1/98	10/7/98	ND	X 4J
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/7/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/7/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/7/98	ND	X UJ
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 08	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	0.20	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 16	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/7/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 06	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 11	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 26	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 09	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 09	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 08	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 06	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 06	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	

VSP/JW

Approved By _____
 IS2P002995 SVM.AY4 - 19 10/15/98

Date

(10/20/98)

00137

Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98
Date Extracted: 9/1/98
Date Analyzed: 10/7/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354038	Prep Method	EPA 3550A
Lab Code	K9805793-019	Analysis Method	8270C
Test Notes		Units	mg/Kg (ppm)
CAS Number	TIC	Retention Time (minutes)	Estimated Concentration
-	Unknown	26 57	1 2
-	Unknown aldehyde	26 89	3 2
-	Unknown alcohol	27 62	0 4
198-55-0	Perylene	27 84	0 3
-	Unknown	29 04	2 0
-	Unknown aldehyde	29 34	2 2
-	Unknown	29 85	1 0
-	Unknown ketone	29 97	0 4
57-88-5	Cholesterol	30 28	0 7
-	Unknown	30 73	0 8
83-47-6	gamma -Sitosterol	32 24	2 2
-	Unknown	32 38	2 1
-	Unknown	32 45	2 1
-	Unknown	32 53	1 6
-	Unknown	33 00	4 4
-	Unknown	33 28	1 1
-	Unknown	33 39	0 7
-	Unknown	33 64	0 6
1058-61-3	Stigmast-4-en-3-one	33 89	1 1

Approved By _____

Date

10/20/98

00138

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
 Project: Duwamish River/4000-027-001-2019-38
 Sample Matrix: Sediment

Service Request: K9805793
 Date Collected: 8/26/98
 Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354039						Units	mg/Kg (ppm)
Lab Code	K9805793-020						Basis	Dry
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	0.12	J
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/7/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	R UJ
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	R UJ
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/7/98	ND	R UJ
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/7/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/7/98	ND	R UJ
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	UJ
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	R UJ
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/7/98	ND	R UJ
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/7/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/7/98	ND	

Acid fraction results from
 re-extraction & re-analysis

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Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	98354039	Units	mg/Kg (ppm)
Lab Code	K9805793-020	Basis	Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0 1	1	9/1/98	10/7/98	ND	
2-Methyl-4,6-dimethylphenol	EPA 3550A	8270C	0 2	1	9/1/98	10/7/98	ND	R U J
N-Nitrosodiphenylamine	EPA 3550A	8270C	0 04	1	9/1/98	10/7/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0 04	1	9/1/98	10/7/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0 1	1	9/1/98	10/7/98	ND	R U J
Phenanthrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 06	
Anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 14	
Pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 12	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0 2	1	9/1/98	10/7/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 05	
Chrysene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 08	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 12	
Di-n-octyl Phthalate	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 06	
Benzo(k)fluoranthene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 07	
Benzo(a)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 05	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 04	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	0 04	
Carbazole	EPA 3550A	8270C	0 02	1	9/1/98	10/7/98	ND	

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Page No..

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: 8/26/98
Date Received: 8/27/98
Date Extracted: 9/1/98
Date Analyzed: 10/7/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name 98354039
Lab Code K9805793-020
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
-	Unknown	10 99	0 4	
-	Unknown	21 58	0 4	
822-23-1	Acetic acid, octadecyl ester	26 56	0 5	
-	Unknown aldehyde	26 87	1 5	
-	Unknown	29 03	0 8	
-	Unknown aldehyde	29 33	1 2	
-	Unknown ketone	29 96	0 3	
57-88-5	Cholesterol	30 28	0 6	
-	Unknown	30 72	0 4	
-	Unknown aldehyde	31 03	0 5	
-	Unknown	32 21	1 4	
-	Unknown	32 35	0 8	
-	Unknown	32 42	0 8	
-	Unknown	32 50	0 7	
-	Unknown	32 97	1 6	
-	Unknown	33 26	0 4	
-	Unknown	33 37	0 4	
-	Unknown	33 63	0 4	
1058-61-3	Stigmast-4-en-3-one	33 88	0 5	

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Date 10/20/98

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Page No

KBP/10/29

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: NA
Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	Method Blank			Units	mg/Kg (ppm)			
Lab Code	KWG9802839-4			Basis	Dry			
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Bis(2-chloroethyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Phenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Chlorophenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,3-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,2-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
1,4-Dichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzyl Alcohol	EPA 3550A	8270C	0.05	1	9/1/98	10/5/98	ND	
Bis(2-chloroisopropyl) Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachloroethane	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
N-Nitrosodi-n-propylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
3- and 4-Methylphenol Coelution	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Nitrobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Isophorone	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
2,4-Dimethylphenol	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Bis(2-chloroethoxy)methane	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2,4-Dichlorophenol	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Benzoic Acid	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
1,2,4-Trichlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Naphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloroaniline	EPA 3550A	8270C	0.06	1	9/1/98	10/5/98	ND	
Hexachlorobutadiene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chloro-3-methylphenol	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
2-Methylnaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Hexachlorocyclopentadiene	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
2,4,6-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4,5-Trichlorophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2-Chloronaphthalene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Acenaphthylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dimethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
2,6-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Acenaphthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3-Nitroaniline	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
2,4-Dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Dibenzofuran	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Nitrophenol	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
2,4-Dinitrotoluene	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Fluorene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
4-Chlorophenyl Phenyl Ether	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Diethyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F. Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: NA
Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name	Method Blank	KWG9802839-4	Units Basis	mg/Kg (ppm) Dry				
Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
4-Nitroaniline	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
2-Methyl-4,6-dinitrophenol	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
N-Nitrosodiphenylamine	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
4-Bromophenyl Phenyl Ether	EPA 3550A	8270C	0.04	1	9/1/98	10/5/98	ND	
Hexachlorobenzene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Pentachlorophenol (PCP)	EPA 3550A	8270C	0.1	1	9/1/98	10/5/98	ND	
Phenanthrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Anthracene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Di-n-butyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Pyrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Butyl Benzyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
3,3'-Dichlorobenzidine	EPA 3550A	8270C	0.2	1	9/1/98	10/5/98	ND	
Benz(a)anthracene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Chrysene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Di-n-octyl Phthalate	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzo(b)fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzo(k)fluoranthene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzo(a)pyrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Indeno(1,2,3-cd)pyrene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Dibenz(a,h)anthracene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Benzo(g,h,i)perylene	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	
Carbazole	EPA 3550A	8270C	0.02	1	9/1/98	10/5/98	ND	

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Date 10/20/98

00143
Page No

10/20/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805793
Date Collected: NA
Date Received: NA
Date Extracted: 9/1/98
Date Analyzed: 10/5/98

Tentatively Identified Compounds (TIC)
Base Neutral/Acid Semivolatile Organic Compounds

Sample Name Method Blank
Lab Code KWG9802839-4
Test Notes

Prep Method EPA 3550A
Analysis Method 8270C
Units mg/Kg (ppm)
Basis Dry

CAS Number	TIC	Retention Time (minutes)	Estimated Concentration	Result Notes
No tentatively identified compounds detected				

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Page No